

PCCU Inotrope Infusion Information

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Purpose

This guideline provides information on the dose ranges, preparation, compatibility data and stability of inotrope infusions used on PCCU.

Intended Audience

For use of healthcare professionals on PCCU at Sheffield Children's Hospital NHS Foundation Trust

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1. Introduction

This guideline provides information on the dose ranges, preparation, compatibility data and stability of inotrope infusions used on PCCU. This guideline is not intended to advise on the choice of inotropic agent for individual patients.

Users of this guideline should also be aware of the trust guideline 'Guideline for administration of vasoactive infusions (CAEC Reg ID 1314) which addresses safety and practical considerations of administering inotrope infusions.

2. Intended Audience

For the use of healthcare professionals on PCCU at Sheffield Children's Hospital NHS Foundation Trust.

3. Guideline Content

See Appendix 1.

4. References

1. BNF for Children. Accessed online February 2020 at <https://www.medicinescomplete.com/>
2. Evelina Paediatric Formulary. Accessed online February 2020 at <http://cms.ubqo.com/public/d2595446-ce3c-47ff-9dcc-63167d9f4b80>
3. Medusa Injectable Medicines Guide. Accessed online February 2020 at <http://medusa.wales.nhs.uk/>
4. King Guide to Parenteral Admixtures. Accessed online February 2020 at <https://www.kingguide.com/index.html>
5. Paediatric and Neonatal Dosage Handbook. Lexicomp Drug Reference Handbook 22nd Edition, 2015.

Appendix 1. PCCU Inotrope Infusion Information

Ideally all inotrope infusions should be infused CENTRALLY unless otherwise indicated

Drug	Dose Range	To Make Up Infusion	Diluents	Stability	Comments
ADRENALINE	0.1- 1.5 microgram/kg/minute Maximum dose may be exceeded <u>only</u> by CONSULTANT decision	IDEALLY FOR CENTRAL ADMINISTRATION <u>300 microgram /kg (0.3mg/kg) in 50ml diluent</u> @ 1ml/hr = 0.1microgram/kg/minute FOR PERIPHERAL ADMINISTRATION (Short term only) <u>1mg in 50ml diluent</u> @ 0.3ml/kg/hr = 0.1microgram/kg/minute	NS, G5W, G10W Concentrations up to 1mg in 1ml have been administered CENTRALLY	24 hours	Do not use discoloured solutions. Incompatible with sodium bicarbonate
DOBUTAMINE	2-20 microgram/kg/minute	FOR PERIPHERAL ADMINISTRATION <10kg: <u>6mg/kg in 50ml diluent</u> @ 1ml/hr = 2microgram/kg/minute >10kg: <u>3mg/kg in 50ml diluent</u> @ 1ml/hr = 1microgram/kg/minute FOR CENTRAL ADMINISTRATION <40kg: <u>15mg/kg in 50ml diluent</u> @ 1ml/hr = 5microgram/kg/minute >40kg: <u>7.5mg/kg in 50ml diluent</u> @ 2ml/hr = 5microgram/kg/minute	NS, G5W,G10W Concentrations of 5mg in 1ml and over can be used in fluid restricted patients but these must be given CENTRALLY Can be administered NEAT (12.5mg in 1ml) via a CENTRAL line	24 hours	Incompatible with aciclovir, aminophylline, furosemide, heparin, sodium bicarbonate and thiopental Solution may turn pink- still OK to use.
DOPAMINE	3-20 microgram/kg/minute	FOR PERIPHERAL ADMINISTRATION <10kg: <u>6mg/kg in 50ml diluent</u> @ 1ml/hr = 2microgram/kg/minute >10kg: <u>3mg/kg in 50ml diluent</u> @ 1ml/hr = 1microgram/kg/minute FOR CENTRAL ADMINISTRATION <u>15mg/kg in 50ml diluent</u> @ 1ml/hr = 5microgram/kg/minute	NS, G5W, G10W up to a concentration of 3.2mg in 1ml Can be administered NEAT (200mg in 5ml) via a CENTRAL line	24 hours	Discard if yellow/brown discolouration occurs. Incompatible with; acyclovir, furosemide, insulin, sodium bicarbonate and thiopental
MILRINONE	50 – 75 microgram/kg over 30 to 60 minutes * then 0.5 – 0.75 micrograms/kg/minute * Reduce or omit initial dose if at risk of hypotension	FOR PERIPHERAL ADMINISTRATION <u>10mg in 50ml diluent</u> @ 0.15ml/kg/hour = 0.5 micrograms/kg/minute FOR CENTRAL ADMINISTRATION <u>50mg in 50ml</u> @ 0.03ml/kg/hour = 0.5 micrograms/kg/minute	NS, G5W May be administered neat (1mg/ml) via a CENTRAL line. May be more appropriate to prepare 10mg in 10ml syringe to avoid excessive wastage depending on rate.	24 hours	Y-site compatible with dobutamine, dopamine, adrenaline & noradrenaline. Incompatible with furosemide and sodium bicarbonate Care in renal impairment Caution: -BNFc dose in microgram/kg/hour
NORADRENALINE BASE	0.02-1 microgram/kg/minute Maximum dose may be exceeded <u>but only</u> by CONSULTANT decision	FOR CENTRAL ADMINISTRATION <u>300microgram/kg (0.3mg/kg) in 50ml diluent</u> @ 1ml/hr = 0.1microgram/kg/minute (so dose range = 0.2 - 10mls/hour at this concentration)	G5W, - Maximum concentration 40microgram in 1ml Do not dilute in Sodium Chloride Can be administered NEAT (1mg in 1ml) via a CENTRAL line	24 hours	Discard if pink/brown discolouration occurs Remember : the dose is expressed as noradrenaline base (i.e amps contain 4mg in 4ml as base) Incompatible with aminophylline, insulin, sodium bicarbonate and thiopental.

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Drug	Dose Range	To Make Up Infusion	Diluents	Stability	Comments
ARGIPRESSIN (Vasopressin/ Pitressin®)	0.00015-0.0005units/kg/minute Max: 0.04units per minute- (Adult dose)	FOR CENTRAL ADMINISTRATION < 10kg: 10 units in 50ml diluent @ 0.045ml/kg/hr = 0.00015 units/kg/minute (low dose) up to 0.15ml/kg/hour = 0.0005 units/kg/minute > 10kg: 20 units in 50ml diluent @ 0.0225 ml/kg/hr = 0.00015 units/kg/minute (low dose) up to 0.075mls/kg/hr = 0.0005 units/kg/minute max dose	NS, G5W At 0.1-1 unit/ml concentration	18 hours	Y-site compatible with adrenaline, dobutamine, dopamine and noradrenaline. Incompatible with furosemide and phenytoin pH 2.5-4.5 Stocked in PICU fridge Run in ml/hr on IV syringe pumps as unable to run in unit/kg/minute. Do not use Desmopressin Caution – ALWAYS check dose units in other sources. Some state doses in units/kg/hour or in milliunits/kg/minute

Different dose for care of the Organ/Tissue donor. See PCCU Guideline Ref 1205

Maximum dose may be exceeded but **only** by CONSULTANT decision (doses up to 0.002units/kg/min have been used)

Remember to prescribe UNITS in full (Do not abbreviate)

ECMO centres may request higher doses for potential ECMO patients (up to 0.0015units/kg/min)

Key: NS = Sodium Chloride 0.9% G5W = Glucose (Dextrose) 5% G10W = Glucose (Dextrose) 10%

NB: Weaning stickers are available to enable dose reduction in a controlled manner

Double Strength Vasoactive infusions

The following drugs can be prepared as 'double strength' infusions if required to reduce fluid volumes

Drug	Dose Range	Double Strength Infusion for Central administration	Infusion rates
ADRENALINE	0.1 - 1.5 microgram/kg/minute	600microgram/kg (0.6mg/kg) in 50ml	0.5 – 7.5ml/hr
DOBUTAMINE	2 - 20 microgram/kg/minute	< 40kg: 30mg/kg in 50ml > 40kg: 625mg in 50ml (i.e. neat)	0.2 – 2ml/hr 0.01 – 0.096ml/kg/hr
DOPAMINE	3 - 20 microgram/kg/minute	30mg/kg in 50ml	0.3 – 2ml/hr
NORADRENALINE BASE	0.02 - 1 microgram/kg/minute	600microgram/kg (0.6mg/kg) in 50ml	0.1 – 5ml/hr

These infusions should be administered via the PCCU Guardrails dataset on the syringe pumps.